

OCEAN POLLUTION / INSTRUCTOR INFO

Summary

In this lesson, students will learn about the different types of pollutants threatening the health of our oceans. Students will also learn how they can prevent pollution and preserve natural resources. This lesson will inspire students to think about the ocean, its animals, pollution, and how to be environmental stewards by taking care of the habitat where these plants and animals live.

Part 1. Introduction

Part 2. Ocean Pollution

Part 3. Activity 1. Dirtied Water

Part 4. Activity 2. Ocean Steward Stories

Goals & Objectives

The students will:

- Classify living and non-living things;
- Define stewardship as the careful and responsible care of the environment;
- Understand that the way people live affects the environment;
- Learn about pollution and how it causes harm to the natural environment;
- Understand different types of pollution;
- And understand that all living things have needs for survival.

// STANDARDS

STEM

This lesson plan aims to assist teachers in implementing a STEM-based program into their classroom while inspiring the next generation of explorers, scientists, and stewards of the ocean. Based on real science and the Global Shark Tracker™, “Ocean Pollution” is intended to promote environmental awareness and to prepare students for STEM careers.

Helpful Tips

1. The content in this lesson is based on the conservation work of OCEARCH™ and the Global Shark Tracker™. Spend a few minutes getting familiar with the website and the tracker if you have not done so already. The Global Shark Tracker™ is also available as an app for iPhone and android.
2. This lesson plan is designed to be adaptable to suit your specific needs. Use the entire lesson plan or just parts of it. This material can be expanded to be an entire unit or condensed for just one day in the classroom.
3. Vocabulary words will be underlined as they first appear in the lesson plan. A complete list of vocabulary words is included as well.
4. Answers to questions and prompts for discussions will appear in italics.
5. Optional activities and content (side notes) will appear in a box. Use these to enhance your lesson and adapt it to suit your needs!
6. Have questions for M/V OCEARCH Expedition Leader, Chris Fischer? Email info@OCEARCH.org to schedule a Skype session and let your students/child talk directly to Chris and the M/V OCEARCH crew!
7. Email all questions about this lesson to info@OCEARCH.org.

Vocabulary

Environment: The biotic (living) and abiotic (non-living) surroundings of an organism.

Organism: An individual living thing.

Pollution: Introduction of chemicals or other contaminants into the environment that causes a negative impact.

Stewardship : The careful and responsible care of the environment

OCEAN POLLUTION / LESSON PLAN

PART 1. INTRODUCTION 5-10 mins

Before discussing pollution, ask the students if they can distinguish between a living and a non-living thing.

A living thing is an organism that:

- Grows,
- Can reproduce,
- Is sensitive to changes in its environment,
- And has needs, such as food, water, oxygen, and sunlight.

Make sure students understand that a living thing can also be something that was once alive, like a log for example. Something that is “dead” is also a living thing.

All living things have needs in order to survive. But what happens if a living thing doesn’t have their needs met? What if something happens to their environment that makes it difficult or impossible for a living thing to meet its own needs? Ask the students to brainstorm reasons that would keep a living thing from meeting its needs for survival.

Possible answers: Natural disasters, deforestation, and pollution

PART 2. OCEAN POLLUTION 5-10 mins

A lot of the time, living things such as plants and animals are unable to meet their needs because of humans. Humans are one of the main sources of pollution.

Pollution occurs when an environment is contaminated, or dirtied, by waste, chemicals, trash, and other substances.

Ask the students to think of pollution they might see around their school or home. Allow time for discussion.

There are three main forms of pollution: air, land, and water. This lesson will focus on water pollution and more specifically, ocean pollution.

The world’s oceans are facing many threats due to pollution. Pollution comes in many forms including pesticides, fertilizers, and litter. How do these pollutants get into the oceans and how do they affect our oceans and wildlife?

Many shark species are becoming threatened and endangered due to human activity and human interactions. Humans kill approximately 100 million sharks a year! Major threats to sharks include, but are not limited to, commercial fishing, bycatch, and habitat degradation. And the negative public image of sharks is a challenge for conservation efforts.

PART 3. ACTIVITY 1. DIRTIED WATER 20-30 mins

Many shark species are becoming threatened and endangered due to human activity and human interactions. Humans kill approximately 100 million sharks a year! Major threats to sharks include, but are not limited to, commercial fishing, bycatch, and habitat degradation. And the negative public image of sharks is a challenge for conservation efforts.

Introduction

The purpose of this activity is to inspire students to think about the ocean, its animals, pollution, and how to be environmental stewards by taking care of the habitat where these plants and animals live. In this activity, students will have a hands-on experience to help them understand how pollution and waste affect the ocean environment.

Materials

- Large plastic container; preferably see through
- Vegetable or canola oil
- Tiny pieces of torn up paper
- Fishing line or floss
- Dirt
- Sand
- Cotton balls

Instructions for Teachers

1. Tell your students you are going to demonstrate how pollution affects the ocean.
2. Fill the large plastic container with clean water. This will represent the ocean.
3. Now, pour some of the oil into the water. This will represent an oil spill as well as chemical waste. Ask the students to observe what happens. Ask them to describe how the oil affects the water.
4. Hand out the rest of the “pollutants” to each student so everyone has a small amount. Then have them take turns adding it to the container of water.
5. Students should carefully observe how the water changes with each additional pollutant.
6. Ask the students how this might affect sea animals. Would they be able to survive in water this dirty? What might happen to animals that live in polluted water? Answer: They might not be able to swim or breathe. They could even die.
7. Introduce stewardship to the students. Define stewardship as the careful and responsible care of the environment. Explain that by helping take care of the oceans, they are acting for the common good and are demonstrating good stewardship.
8. Discuss ways in which the students can take care of the ocean. (By not littering, picking up things that don’t belong on the beach, using products that have less packaging materials, etc.)

PART 4. ACTIVITY 2. OCEAN STEWARD STORIES 20-30 mins

The purpose of this activity is to inspire students to think about the ocean, its animals, pollution, and how to be environmental stewards by taking care of the habitat where these plants and animals live. In this activity, students will have a hands-on experience to help them understand how pollution and waste affect the ocean environment.

Introduction

Ask the students what ocean animals need to survive. Ocean animals need many of the same things that people need to survive, such as food, water, and shelter.

Make a chart on the board to compare and contrast what humans need to survive and what ocean animals need to survive. Discuss the results of the chart. Why is it important for the ocean animals to have these necessities? What would happen to the animals if they didn't have the necessities they need to stay alive?

Materials

- Art paper or construction paper
- Markers, crayons, or colored pencils

Instructions for Teachers

1. Give the students a piece of art paper or construction paper.
2. Instruct them to draw a picture that will be added to a class book. The drawing should show how pollution affects ocean animals or how people can keep the ocean clean.
3. Students should write at least one sentence explaining their drawing.
4. Collect the student's drawings and create a class book. Ask each student to share their page of the book with the whole class.